IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTOR: Philip T. Kortum

TITLE: Unified Digital Subscriber Line Self-
                        Installation Process and Kit

ATTORNEY: Joseph F. Hetz
                        BRINKS HOFER GILSON & LIONE
                        P.O. BOX 10395
                        CHICAGO, ILLINOIS 60610
                        (312) 321-4719

UNIFIED DIGITAL SUBSCRIBER LINE SELF-INSTALLATION PROCESS AND KIT

Notice of Copyright

5

A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of

10 the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

Technical Field

15

The present invention relates to Digital Subscriber Line installation.

Background of the Invention

20

Digital Subscriber Line (DSL) is a high speed internet access technology. Unlike other high-speed internet access technologies, DSL runs over ordinary

25 telephone lines. By its nature, DSL is amenable to customer self-installation.

DSL requires the installation of up to five components: a network card, a DSL modem, DSL filters, connection software, and Internet Service Provider

30 (ISP) specific software. Current DSL self-installation kits comprise a collection of each of these vendor

products packaged into a single box. These kits
present customers with as many as five different
instruction sets, many of which being labeled "Read Me
First". As shown in FIG. 1, the kit may comprise a

5   network card vendor installation manual 100, a filter
vendor installation manual 102, a modem vendor
installation manual 104, a connection software vendor
installation manual 106, and an ISP vendor installation
manual 110.

10   There are several shortcomings associated with the
above-described self-installation kits. A user may be
uncertain as to which manual to read first, and unable
to identify key steps in each manual. User testing has
shown that critical installation steps were often

15   missed with the above-described self-installation kits.
Consequently, users were required to redo portions of
the installation due to an incorrect installation
sequence.

         Further, many vendor components are specific to a

20   particular computer operating system (OS). Vendors
include "universal" manuals which inter-mix
instructions for different operating systems. For
example, the network card vendor installation manual
100 may inter-mix instructions for N different

25   operating systems (as indicated by reference numerals
112, 114 and 116). The modem vendor installation
manual 102 may inter-mix instructions for N different
operating systems (as indicated by reference numerals
120, 122 and 124). The connection software vendor

30   installation manual 106 may inter-mix instructions for
N different operating systems (as indicated by

reference numerals 126, 130 and 132). Users are required to make the correct OS selection in each manual, and then find the appropriate OS instruction subset in each manual. Testing has shown that the wrong OS instruction subset is followed by an undesirably high proportion of users.

Still further, the ISP component is typically shipped separately from the rest of the DSL kit. This also results in customer confusion and installation sequencing errors. Yet still further, conflicting information may be present in different manuals since the vendors typically construct their manuals in isolation from each other.

All of the aforementioned shortcomings have led to an undesirably high rate of failures and frustration for customers who attempt to self-install DSL. These failures lead to help desk calls and, in certain cases, the dispatch of a technician to the customer's premise.

Brief Description of the Drawings

The invention is pointed out with particularity in the appended claims. However, other features of the invention will become more apparent and the invention will be best understood by referring to the following detailed description in conjunction with the accompanying drawings in which:

FIG. 1 is a flow diagram of a prior art self-installation process for a digital subscriber line;

FIG. 2 is a flow diagram of an embodiment of a digital subscriber line self-installation process in accordance with the present invention;

FIG. 3 is a block diagram of an embodiment of a
5   digital subscriber line self-installation kit;

FIGS. 4 to 29 illustrate an embodiment of a unified installation manual for a first class of operating systems; and

FIGS. 30 to 57 illustrate an embodiment of a
10   unified installation manual for a second class of operating systems.

Detailed Description of Preferred Embodiments

15   Briefly, embodiments of the present invention provide an improved process and kit for DSL self-installation wherein an entire installation process is described within a single instruction manual 140, as shown in FIG. 2. Beneficially, the installation
20   process requires no more than one operating system selection step by a user.

FIG. 3 is a block diagram of an embodiment of a digital subscriber line self-installation kit 150. The kit 150 comprises an optional network card 152, a
25   digital subscriber line modem 154, at least one digital subscriber line filter 156, a computer-readable medium 160 whose contents comprise computer-readable connection software code 162, an optional computer-readable medium 164 whose contents comprise computer-
30   readable ISP-specific software code 166, and an instruction manual 170. The network card 152, the

digital subscriber line modem 154, the at least one
digital subscriber line filter 156, and the computer-
readable media 160 and 164 may be contained within a
container such as a box to form the kit 150.

5   The various hardware components of the kit 150
typically are provided by different vendors. Thus,
each hardware component may be housed within its own
container, such as a box, which includes an instruction
manual from the vendor. The instruction manual 170

10   obviates the need for a user to refer to any of the
vendor instruction manuals. In particular, the
instruction manual 170 describes a unified installation
process for the digital subscriber line modem 154, the
at least one digital subscriber line filter 156, the

15   computer-readable connection software code 162, and
optionally for the network card 152 and the computer-
readable ISP-specific software code 166. Further, the
steps in the unified installation process are
customized to reflect the set-up and configuration that

20   are most desirable to customers of a DSL provider,
rather than a generic instruction set designed for all
possible contingencies.

The various hardware components of the kit 150

Beneficially, the unified installation process
requires no more than one operating system selection

25   step by the user. Optionally, the user identifies
his/her computer's operating system during the process
of ordering DSL. In this case, the correct manual for
the specific operating system/modem combination may be
packaged in the self-installation kit 150 so that no

30   operating system selection steps are required by the
user upon receiving the kit 150. As another option,

the kit 150 may comprise a plurality of instruction
manuals (which includes the instruction manual 170),
each being specific to a class of operating systems.
In this case, the only operating system selection step
5   to be performed by the user is selecting the correct
one of the instruction manuals upon receiving the kit
150. Once the user begins to refer to the instruction
manual 170, no further operating system selection steps
are required. As a further option, the instruction
10   manual 170 may include one section providing a unified
installation process for a first operating system, and
another section providing a unified installation
process for a second operating system. In this case,
the only operating system selection step to be
15   performed by the user is selecting the correct section
of the instruction manual 170. Once the user is within
the correct section, no further operating system
selection steps are required.

     Optionally, the instruction manual 170 further
20   provides point of contact telephone numbers for
specific installation components and specific
installation steps. For example, the instruction
manual 170 may provide a first point of contact
telephone number for help questions associated with the
25   network card 152, a second point of contact telephone
number for help questions associated with the digital
subscriber line modem 154, a third point of contact
telephone number for help questions associated with the
at least one digital subscriber line filter 156, a
30   fourth point of contact telephone number for help
questions associated with the connection software code

162, and a fifth point of contact telephone number for help questions associated with the ISP-specific software code 166.

It is noted that the computer-readable media 160 and 164 may have various embodiments, including but not limited to optical media such as an optical disk, magnetic media such as a magnetic disk or magnetic tape, and electronic media such as an electronic memory card. Further, the computer-readable media 160 and 164 may be embodied either by two or more distinct members (e.g. two different disks), or by a single member (e.g. a single disk).

FIGS. 4 to 29 illustrate an embodiment of a unified installation manual for a first class of operating systems. The first class of operating systems consists of WINDOWS 95®, WINDOWS 98®, WINDOWS 2000® and WINDOWS ME® from Microsoft Corporation.

As shown in FIG. 4, the cover of the manual is clearly labeled "READ ME FIRST" and identifies the class of WINDOWS® operating systems. FIG. 5 shows a page of the manual which provides a Table of Contents. FIG. 6 shows a page of the manual which describes a step to verify the requirements to install the components in the user's computer. FIG. 7 shows a page of the manual which describes a step to verify the contents of the kit. FIG. 8, 9 and 10 show pages of the manual which describe a step of installing a digital subscriber line filter on every telephone line. FIGS. 11 to 15 show pages of the manual which describe steps performed using connection software code. FIGS. 16 to 19 show pages of the manual which describe steps

to install an Ethernet network card. FIGS. 20 and 21 show pages of the manual which describe steps to install a DSL modem. FIG. 22 shows a page of the manual which describes steps performed using the

5 connection software code to finalize configuration of the system. FIG. 23 shows a page of the manual which directs the user to install ISP-specific software code. FIGS. 24 to 29 provide appendices to supplement the installation process.

10 FIGS. 30 to 57 illustrate an embodiment of a unified installation manual for a second class of operating systems. The second class of operating systems consists of MACINTOSH® Operating Systems from Apple Corporation.

15 As shown in FIG. 30, the cover of the manual is clearly labeled "READ ME FIRST" and identifies the class of MACINTOSH® operating systems. FIG. 31 shows a page of the manual which provides a Table of Contents. FIG. 32 shows a page of the manual which describes a

20 step to verify the requirements to install the components in the user's computer. FIG. 33 shows a page of the manual which describes a step to verify the contents of the kit. FIG. 34, 35 and 36 show pages of the manual which describe a step of installing a

25 digital subscriber line filter on every telephone line. FIGS. 37, 38 and 39 show pages of the manual which describe steps performed using connection software code. FIG. 40 shows a page of the manual which addresses whether or not to install an Ethernet network

30 card. FIGS. 41 and 42 show pages of the manual which describe steps to install a DSL modem. FIGS. 43 and 44

show pages of the manual which describe steps performed
using the connection software code to finalize
configuration of the system. FIG. 45 shows a page of
the manual which directs the user to install ISP-

5 specific software code. FIGS. 46 to 57 provide
appendices to supplement the installation process.

Several embodiments including preferred
embodiments of a unified DSL self-installation process
and kit have been described herein.

10 By providing a single instruction manual which
describes a unified installation process, a user no
longer needs to determine which manuals are pertinent
and in what order to use the manuals. The single
instruction manual promotes an appropriate sequence of

15 installation steps to be followed by the user without
skipping any required steps. Further, by providing the
user with instructions that are correctly matched to
his/her computer's operating system, errors associating
with following instructions for an incorrect operating

20 system are mitigated. Confusion and sequence errors
are further mitigated by including the ISP software
component with the kit. Points of contact for specific
installation components may be clearly marked and
associated with specific steps in the instruction

25 manual to promote correct routing of help calls. Use
of the new process has increased installation success
rates from below 20% to near 95% in laboratory
conditions.

It will be apparent to those skilled in the art

30 that the disclosed invention may be modified in
numerous ways and may assume many embodiments other

than the preferred form specifically set out and
described above. For example, instruction manuals
specific to other operating systems, such as WINDOWS
NT®, WINDOWS XP®, and LINUX, are also within the scope

5   of the present disclosure. Further, instruction
manuals specific to alternative DSL modems, such as
those having a USB (Universal Serial Bus) interface or
a PCI (Peripheral Component Interconnect) interface,
are within the scope of the present disclosure.

10   Accordingly, it is intended by the appended claims
to cover all modifications of the invention which fall
within the true spirit and scope of the invention.
       What is claimed is: